AMENDMENTS IN THE CLAIMS

1. (Withdrawn) An apparatus for encoding k consecutive input bits indicating a TFCI into a sequence of m symbols in an NB-TDD mobile communication system, comprising:

a 1-bit generator for continuously generating same symbols;

an orthogonal sequence generator for creating first sequences having a length m by puncturing a plurality of basis orthogonal sequences having a length of at least 2^n where $2^n>m$, according to a predetermined puncturing pattern;

a mask sequence generator for creating second sequences having a length m by puncturing basis mask sequences having a length of at least 2^n where $2^n>m$;

a plurality of multipliers provided in association with input TFCI bits, for multiplying the same symbols, the first sequences and the second sequences by associated TFCI bits; and

an adder for adding output sequences of the multipliers and outputting the sequence of 48 symbols.

2. (Withdrawn) The apparatus as claimed in claim 1, wherein the basis orthogonal sequences include a 1^{st} Walsh code, a 2^{nd} Walsh code, a 4^{th} Walsh code, an 8^{th} Walsh code, a 16^{th} Walsh code and a 32^{nd} Walsh code, selected from orthogonal sequences of length 64.

3. (Withdrawn) The apparatus as claimed in claim 1, wherein the basis mask sequences include a 1^{st} mask sequence of 00110101011011111010001100000110111101100101001110011111111000101, a 2^{nd} mask sequence of 01000111110100011110110101111011011110110001001011010001101110000, and a 4^{th} mask sequence of 00011000111001111101010011010100101111011011110101110001100011110.

4. (Withdrawn) The apparatus as claimed in claim 1, wherein the predetermined puncturing pattern is one of following puncturing patterns:

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}

{0, 4, 8,13,16,21,25,28,32,37,43,44,49,52,56,62}

{0, 4, 8,13,16,21,25,31,32,37,43,44,49,52,56,61}

{0, 4, 8,13,18,21,25,30,35,36,40,46,50,53,57,62}

{0, 4, 8,13,18,21,25,30,35,37,40,47,50,53,57,62}

{0, 4, 8,13,19,22,27,30,33,36,41,44,49,55,58,61}

{0, 4, 8,13,19,22,27,30,33,36,41,44,50,52,56,63}

{0, 4, 8,13,19,22,27,30,33,36,41,44,50,52,58,61}

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}

5. (Withdrawn) A method for encoding k consecutive input bits indicating a TFCI of each of successively transmitted frames into a sequence of m coded symbols in an NB-TDD mobile communication system, comprising:

continuously generating same symbols;

creating first sequences having a length m by puncturing a plurality of basis orthogonal sequences;

creating second sequences having a length m by puncturing basis mask sequences;

multiplying the same symbols, the first sequences and the second sequences by associated TFCI bits; and

adding the resulting sequences calculated by the multiplication and outputting the sequence of m symbols.

6. (Withdrawn) The method as claimed in claim 5, wherein the basis orthogonal sequences include a 1st Walsh code, a 2nd Walsh code, a 4th Walsh code, an 8th Walsh code, a 16th Walsh code and a 32nd Walsh code, selected from orthogonal sequences of length 64.

7. (Withdrawn) The method as claimed in claim 5, wherein the basis mask sequences include a 1st mask sequence of 00110101011011111010001100000110111011001010011100111111000101, a 2nd mask sequence of 01000111110100011110110101111011011110110001001011010001101110000, and a 4th mask sequence of 00011000111001111101010011010100101111011011110101110001100011110.

8. (Withdrawn) The method as claimed in claim 5, wherein the predetermined puncturing pattern is one of following puncturing patterns:

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}

{0, 4, 8,13,16,21,25,28,32,37,43,44,49,52,56,62}

{0, 4, 8,13,16,21,25,31,32,37,43,44,49,52,56,61}

{0, 4, 8,13,18,21,25,30,35,36,40,46,50,53,57,62}

{0, 4, 8,13,18,21,25,30,35,37,40,47,50,53,57,62}

{0, 4, 8,13,19,22,27,30,33,36,41,44,49,55,58,61}

{0, 4, 8,13,19,22,27,30,33,36,41,44,50,52,56,63}

{0, 4, 8,13,19,22,27,30,33,36,41,44,50,52,58,61}

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}

9. (Withdrawn) An apparatus for encoding 10 consecutive input bits indicating a TFCI into a sequence of 48 symbols in an NB-TDD mobile communication system, comprising:

a (48,10) code generator for generating 48 coded symbols by using length 48 codes which are punctured codes of length 64 Walsh codes and length 48 masks which are punctured codes of length 64 masks,

wherein the punctured codes of length 64 Walsh codes and masks are a set of codes generated by puncturing following positions out of the length 64 Walsh codes and masks;

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}.

10. (Original) A method for encoding 10 consecutive input bits indicating a TFCI into a sequence of 48 coded symbols in an NB-TDD mobile communication system, comprising:

generating first sequences having a length 48 punctured orthogonal sequences;

generating second sequences having a length 48 punctured mask sequences;

multiplying the first sequences with each associated TFCI bit and the second sequences with each associated TFCI bit; and

adding each resulting sequences calculated by the multiplication and outputting the sequence of 48 symbols,

wherein the punctured orthogonal sequences and the punctured mask sequences are sequences generated by puncturing following positions out of length 64 Walsh codes and length 64 masks;

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}.

11. (Original) An apparatus for encoding 10 consecutive input bits indicating a TFCI(Transport Format Combination Indicator) into a sequence of 48 coded symbols in an NB-TDD(Narrowband-Time Division Duplex) mobile communication system, comprising:

a orthogonal sequence generator for generating first sequences having a length 48 punctured orthogonal sequences;

a mask sequence generator for generating second sequences having a length 48 punctured mask sequences;

a plurality of multipliers being associated with TFCI bits for multiplying the associated TFCI bits by the first sequences or the second sequences; and

an adder for adding output sequences of the multipliers and outputting the sequence of 48 symbols,

wherein the punctured orthogonal sequences and the punctured mask sequences are sequences generated by puncturing following positions out of length 64 Walsh codes and length 64 masks;

{0, 4, 8,13,16,20,27,31,34,38,41,44,50,54,57,61}.

12. (New) The method as claimed in claim 10, further comprising step of continuously generating third sequences consisting of same symbols.

13. (New) The method as claimed in claim 10, wherein the orthogonal sequences include a 1^{st} Walsh code, a 2^{nd} Walsh code, a 4^{th} Walsh code, an 8^{th} Walsh code, a 16^{th} Walsh code and a 32^{nd} Walsh code, selected from orthogonal sequences of length 64.

14. (New) The method as claimed in claim 10, wherein the mask sequences include a 1^{st} mask sequence of 00110101011011111010001100000110111101100101001110011111111000101, a

2nd mask sequence of 01000111110100011110110101111011011110110001001011010001101110000, and a 4th mask sequence of 00011000111001111101010011010100101111011011110101110001100011110.

15. (New) The apparatus as claimed in claim 11, further comprising step of continuously generating third sequences consisting of same symbols.

16. (New) The apparatus as claimed in claim 11, wherein the orthogonal sequences include a 1st Walsh code, a 2nd Walsh code, a 4th Walsh code, an 8th Walsh code, a 16th Walsh code and a 32nd Walsh code, selected from orthogonal sequences of length 64.

17. (New) The apparatus as claimed in claim 11, wherein the mask sequences include a 1st mask sequence of 00110101011011111010001100000110111101100101001110011111111000101, a 2nd mask sequence of 01000111110100011110110101111011011110110001001011010001101110000, and a 4th mask sequence of 00011000111001111101010011010100101111011011110101110001100011110.